A032959

TYPE OR PRINT
IN BLACK INK
(For instructions, see booklet: "How to File an Application to Appropriate Water in California")

California Environmental Protection Agency

State Water Resources Control Board
Division of Water Rights
P.O. Box 2000, Sacramento, CA 95812-2000
Tel: (916) 341-5300 Fax: (916) 341-5400
www.waterboards.ca.gov/waterrights

APPLICATION NO: A032959

APPLICATION TO APPROPRIATE WATER

WORKING COPY

1. APPLICANT/AGENT

	APPLICANT	ASSIGNED AGENT (if any)
Name	Dr. Henry F. Chambers, III	Wagner & Bonsignore
	Oak Ridge Ranch and Vineyards	
Mailing Address	2842 26th Street	2151 River Plaza Drive, Suite 100
City, State & Zip	San Francisco, CA 94131-2008	Sacramento, CA 95833
Telephone	(415) 310-2820	(916) 441-6850
Fax		(916) 779-3120
E-mail	hchambers@medsfgh.ucsf.edu	nbonsignore@wbecorp.com

2. OWNERSHIP INFORMATION (Please check type of ownership.)

☑ Sole Owner ☐ Limited Liability Company (LLC) ☐ General Partnership*
☐ Limited Partnership* ☐ Business Trust ☐ Husband/Wife Co-Ownership
☐ Corporation ☐ Joint Venture ☐ Other _____

*Please identify the names, addresses and phone numbers of all partners.

3. PROJECT DESCRIPTION (Provide a detailed description of your project, including, but not limited to, type of construction activity, area to be graded or excavated, and how the water will be used.) Add additional pages if needed and check box below and label as an attachment.

This application supplements pending Application 31920. This application proposes diversion from three unnamed steams to an offstream storage reservoir by way of a proposed pipeline, ditch and culvert. The diversion and storage facilities are existing and are also named in Application 31920. Water will be used for irrigation of up to 39 acres of vineyard, of which 33 acres are already developed and 6 acres are proposed to be developed. Development of the new vineyard will be in accordance with Sonoma County permitting requirements for a Level 2 Vineyard Development. Water will also be used for domestic uses at an existing residence on the property, recreation at the reservoir, and agricultural industrial uses incidental to the operation of a vineyard. New construction will include the installation of a pump in Lower Reservoir (POD #1) and a 650-foot long pipeline for diversion of water to off-stream storage at Upper Reservoir.

☐ *For continuation, see Attachment No. ___*

RECEIVED 8/9/2018
Clk# 1168
$1,111.75
Cyr.

4. PURPOSE OF USE, DIVERSION/STORAGE AMOUNT AND SEASON

a. PURPOSE OF USE (irrigation, domestic, etc.)	DIRECT DIVERSION				STORAGE		
	AMOUNT		SEASON OF DIVERSION		AMOUNT	SEASON OF COLLECTION	
	Rate (cfs or gpd)*	Acre-feet per annum	Beginning date (month & day)	Ending date (month & day)	Acre-feet per annum	Beginning date (month & day)	Ending date (month & day)
Irrigation					17.45	Dec 15	Mar 31
Industrial							
Recreation							
Domestic							
Total afa			Total afa		17.45		

☐ *See Attachment No. ___* * If rate is less than 0.025 cubic feet per second (cfs), use gallons per day (gpd).

b. Total combined amount taken by direct diversion and storage during any one year will be 17.45 acre-feet.

c. Reservoir storage is: ☐ onstream ☑ offstream ☐ underground (If underground storage, attach Underground Storage Form.)

d. County in which diversion is located: Sonoma County in which water will be used: Sonoma

5. SOURCES AND POINTS OF DIVERSION/REDIVERSION *

a. Sources and Points of Diversion (POD)/Points of Rediversion (PORD):

☑ POD / ☐ PORD # 1 on unnamed stream tributary to Russian River thence

☑ POD / ☐ PORD # 2 on unnamed stream tributary to unnamed stream thence Russian River

☑ POD / ☐ PORD # 3 on unnamed stream tributary to unnamed stream thence Russian River

☐ POD / ☐ PORD # tributary to thence

If needed, attach additional pages, check box below and label attachment

☐ *See Attachment No. ___*

b. State Planar and Public Land Survey Coordinate Description:

POD/ PORD #	CALIFORNIA COORDINATES (NAD 83)	ZONE	POINT IS WITHIN (40-acre subdivision)	SECTION	TOWN-SHIP	RANGE	BASE AND MERIDIAN
1	N 2,072,668 E 6,279,692	2	NE ¼ of NE ¼	32	12N	10W	MD
2	N 2,073,050 E 6,280,400	2	NW ¼ of NW ¼	33	12N	10W	MD
3	N 2,072,850 E 6,280,525	2	NW ¼ of NW ¼	33	12N	10W	MD
			¼ of ¼				

If needed, attach additional pages, check box below and label attachment

☐ *See Attachment No. ___*

c. Name of the post office most often used by those living near the proposed point(s) of diversion: Cloverdale

* Place of Offstream Storage: N. 2,072,450, E.6,280,360, NW of NW of Sec. 33, T12N, R10W, M.D.

6. WATER AVAILABILITY

a. Have you attached a water availability analysis for this project? ☐ YES ☑ NO
If NO, provide sufficient information to demonstrate that there is reasonable likelihood that unappropriated water is available for the proposed appropriation: If needed, attach additional pages, check box below and label attachment.

☑ *See Attachment No.* 1

b. Is your project located on a stream system declared to be fully appropriated by the State Water Resources Control Board (State Water Board) during your proposed season of diversion?
☐ YES ☑ NO

c. In an average year, does the stream dry up at any point downstream of your project? ☑ YES ☐ NO
If YES, during which months? ☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☑ Jun ☑ Jul ☑ Aug ☑ Sep ☑ Oct ☑ Nov ☐ Dec

d. What alternate sources of water are available if a portion of your requested diversion season must be excluded because water is not available for appropriation? (e.g., percolating groundwater, purchased water, etc.) If needed, attach additional pages, check box below and label attachment
None

☐ *See Attachment No.* ___

7. PLACE OF USE

a.

USE IS WITHIN (40-acre subdivision)	SECTION*	TOWNSHIP	RANGE	BASE & MERIDIAN	IF IRRIGATED	
					Acres	Presently cultivated?
NW ¼ of NW ¼	33	12N	10W	MD	6	☑ YES ☐ NO
SE ¼ of NE ¼	32	12N	10W	MD	22	☑ YES ☐ NO
NE ¼ of SE ¼	32	12N	10W	MD	11	Partially
¼ of ¼						☐ YES ☐ NO
¼ of ¼						☐ YES ☐ NO
¼ of ¼						☐ YES ☐ NO
¼ of ¼						☐ YES ☐ NO
¼ of ¼						☐ YES ☐ NO
				Total Acres:	39	

*Please indicate if section is projected with a "(P)" following the section number.

☐ *See Attachment No.* ___ Please provide the Assessor's Parcel Number(s) for the place of use:
115-070-009, 117-240-026, 115-070-013

8. PROJECT SCHEDULE

Project is: ☐ proposed, ☒ partially complete or ☐ complete (Year completed - _____).

Extent of completion: Reservoir is complete. Diversion facilities are partially complete, 33 acres of vineyard are developed.

Estimated amount of time in years it will take for construction to be completed: 10

Estimated amount of time in years it will take for water to be put to full beneficial use: 15

9. JUSTIFICATION OF AMOUNTS REQUESTED

a. ☑ IRRIGATION: Maximum area to be irrigated in any one year: 39 acres.

CROP	ACRES	METHOD OF IRRIGATION (sprinklers, flooding, etc.)	WATER USE (Acre-feet/Yr.)	SEASON OF WATER USE	
				Beginning date (month & day)	Ending date (month & day)
Grapes	39	Drip	20 ±	May 1	Oct 31

☐ *See Attachment No.* ___

b. ☑ DOMESTIC: Number of residences to be served: 1 Separately owned? No
☐ YES ☑ NO Number of people to be served: 2 Estimated daily use per person is: 80-100 gallons per day Area of domestic lawns and gardens: ~1800 square feet
Incidental domestic uses:

(dust control area, number and kind of domestic animals, etc.)

a. ☐ STOCKWATERING: Kind of stock: _____ Maximum number: _____
Describe type of operation: _____
(feedlot, dairy, range, etc.)

d. ☑ RECREATIONAL: Type of recreation: ☑ Fishing ☑ Swimming ☐ Boating ☐ Other _____

e. ☐ MUNICIPAL:

POPULATION List for 5-year periods until use is completed		MAXIMUM MONTH		ANNUAL USE		
Period	Population	Average daily use (gallons per capita)	Rate of diversion (cfs)	Average daily use (gallons per capita)	Acre-foot (per capita)	Total (acre-feet)
Present						

☐ *See Attachment No.* ___

Month of maximum use during year: _____
Month of minimum use during year: _____

f. ☐ HEAT CONTROL: Area to be heat controlled: _____ net acres
Type of crops protected: _____
Rate at which water is applied to use: _____ gpm per acre
Heat protection season will begin _____ and end _____.
(month and day) (month and day)

g. ☐ FROST PROTECTION: Area to be frost protected: _____ net acres
Type of crops protected: _____
Rate at which water is applied to use: _____ gpm per acre
The frost protection season will begin _____ and end _____.
(month & day) (month & day)

h. ☑ INDUSTRIAL: Type of industry: Incidental to other uses

Basis for determination of amount of water needed: _____

i. ☐ MINING: Name of the claim: _____ ☐ Patented ☐ Unpatented
Nature of the mine: _____ Mineral(s) to be mined: _____
Type of milling or processing: _____
After use, the water will be discharged into _____ (watercourse)
in _____ ¼ of _____ ¼ of Section _____, T _____, R _____, _____B. & M.

j. ☐ POWER: Total head to be utilized: _____ feet
Maximum flow through the penstock: _____ cfs Maximum theoretical horsepower capable of being generated by the works (cfs x fall ÷ 8.8): _____
Electrical capacity (hp x 0.746 x efficiency): _____ kilowatts at: _____% efficiency
After use, the water will be discharged into _____ (watercourse)
in _____ ¼ of _____ ¼ of Section _____, T _____, R _____, _____B&M. FERC No.: _____

k. ☐ FISH AND WILDLIFE PRESERVATION AND/OR ENHANCEMENT: List specific species and habitat type that will be preserved or enhanced: _____

l. ☐ OTHER: Describe use: _____
Basis for determination of amount of water needed: _____

10. DIVERSION AND DISTRIBUTION METHOD

a. Diversion will be by gravity by means of: Ditch, culvert
(dam, pipe in unobstructed channel, pipe through dam, siphon, weir, gate, etc.)

b. Diversion will be by pumping from: Reservoir
(sump, offset well, channel, reservoir, etc)
Pump discharge rate: 4 ☑ cfs or ☐ gpd Horsepower: 40
Pump Efficiency: 0.7

c. Conduit from diversion point to first lateral or to offstream storage reservoir:

CONDUIT (pipe or channel)	MATERIAL (type of pipe or channel lining; indicate if pipe is buried or not)	CROSS-SECTION (pipe diameter, or ditch depth and top and bottom width) (inches or feet)	LENGTH (feet)	TOTAL LIFT OR FALL		CAPACITY (cfs, ~~gpd or gpm~~)
				feet	+ or -	
Ditch	Earth	2' D x 2' W	560	16±	-	12
Culvert	CMP	24"	80	8.3	-	24
Pipe	PVC	12"	650	50±	+	4

☐ *See Attachment No. ___*

d. Storage reservoirs: (For underground storage, complete and attach underground storage form)

RESERVOIR NAME OR NUMBER	DAM				RESERVOIR		
	Vertical height from downstream toe of slope to spillway level (feet)	Construction material	Length (feet)	Freeboard: dam height above spillway crest (feet)	Surface area when full (acres)	Capacity (acre-feet)	Maximum water depth (feet)
Upper	18	Earth	100/150	2	1.96	18.07	22.0

☐ *See Attachment No. ___*

e. Outlet pipe: Complete for storage reservoirs having a capacity of 10 acre-feet or more.

RESERVOIR NAME OR NUMBER	OUTLET PIPE				
	Diameter in inches	Length in feet	Fall: Vertical distance between entrance and exit of outlet pipe in feet	Head: Vertical distance from spillway to entrance of outlet pipe in feet	Dead Storage: Storage below entrance of outlet pipe in acre-feet
Upper	None - irrigation pump station will serve as alternative outlet				

☐ *See Attachment No. ___*

e. If water will be stored and the reservoir is not at the point of diversion, the maximum rate of diversion to off-stream storage will be 24 cfs. Diversion to offstream storage will be made by:
☐ Pumping ☑ Gravity

11. CONSERVATION AND MONITORING

a. What methods will you use to conserve water? Explain.
Drip irrigation.

b. How will you monitor your diversion to be sure you are within the limits of your water right and you are not wasting water? ☐ Weir ☐ Meter ☐ Periodic sampling ☑ Other (describe)
Pressure transducers in reservoirs

12. RIGHT OF ACCESS

a. Does the applicant own all the land where the water will be diverted, transported and used?
☑ YES ☐ NO
If NO, I ☐ do ☐ do not have a recorded easement or written authorization allowing me access.

b. List the names and mailing addresses of all affected landowners and state what steps are being taken to obtain access:

☐ *See Attachment No. ___*

13. EXISTING WATER RIGHTS AND RELATED FILINGS

a. Do you claim an existing right for the use of all or part of the water sought by this application?
☐ YES ☑ NO
If YES, please specify: ☐ Riparian ☐ Pre-1914 ☐ Registration ☐ Permit ☐ License
☐ Percolating groundwater ☐ Adjudicated ☐ Other (specify) _____

b. For each existing right claimed, state the source, year of first use, purpose, season and location of the point of diversion (to within quarter-quarter section). Include number of registration, permit, license, or statement of water diversion and use, if applicable.

☐ *See Attachment No. ___*

c. List any related applications, registrations, permits, or licenses located in the proposed place of use or that utilize the same point(s) of diversion.
Application 31920

☐ *See Attachment No. ___*

14. OTHER SOURCES OF WATER

Are you presently using, or do you intend to use, purchased water or water supplied by contract in connection with this project? ☐ Yes ☑ No If yes, please explain:

15. MAP REQUIREMENTS

The Division cannot process your application without accurate information showing the source of water and location of water use. You must include a map with this application form that clearly indicates the quarter/quarter, section, township, range, and meridian of (1) the proposed points of diversion and (2) the place of use. A copy of a U.S.G.S. quadrangle/topographic map of your project area is preferred, and can be obtained from sporting goods stores or through the Internet at http://topomaps.usgs.gov. A certified engineering map is required when (1) appropriating more than three cubic feet per second by direct diversion, (2) constructing a dam which will be under the jurisdiction of the Division of Safety of Dams, (3) creating a reservoir with a surface area in excess of ten acres or (4) appropriating more than 1,000 acre-feet per annum by underground storage. See the instruction booklet for more information.

☑ *See Attachment No. 2*

ENVIRONMENTAL INFORMATION

Note: Before a water right permit may be issued for your project, the State Water Board must consider the information contained in an environmental document prepared in compliance with the California Environmental Quality Act (CEQA). This form is not a CEQA document. If a CEQA document has not yet been prepared for your project, a determination must be made of who is responsible for its preparation. If the State Water Board is determined to be responsible for preparing the CEQA document, the applicant will be required to pay all costs associated with the environmental evaluation and preparation of the required documents. Please answer the following questions to the best of your ability and submit with this application any studies that have been conducted regarding the environmental evaluation of your project.

16. COUNTY PERMITS

a. Contact your county planning or public works department and provide the following information:

Person contacted: * Date of contact:
Department: Telephone: ( )
County Zoning Designation:

Are any county permits required for your project? ☐ YES ☐ NO If YES, check appropriate box below:

☑ Grading permit ☐ Use permit ☐ Watercourse ☐ Obstruction permit ☐ Change of zoning
☐ General plan change ☐ Other (explain):

* See note on Item 16 of State Water Resource Control Board's working copy of A031920 by Jennifer Dick-McFadden dated 5/25/2012.

b. Have you obtained any of the required permits described above? ☐ YES ☑ NO
If YES, provide a complete copy of each permit obtained.
☐ *See Attachment No. ___*

17. STATE/FEDERAL PERMITS AND REQUIREMENTS

a. Check any additional state or federal permits required for your project:
☐ Federal Energy Regulatory Commission ☐ U.S. Forest Service ☐ U.S. Bureau of Land Management ☐ U.S. Corps of Engineers ☐ U.S. Natural Res. Conservation Service ☐ Calif. Dept. of Fish and Game ☐ State Lands Commission ☐ Calif. Dept. of Water Resources (Div. of Safety of Dams) ☐ Calif. Coastal Commission ☐ State Reclamation Board ☐ Other (specify)

b. For each agency from which a permit is required, provide the following information:

AGENCY	PERMIT TYPE	PERSON(S) CONTACTED	CONTACT DATE	TELEPHONE NO.
CDFW	LSAA	Fish & Game Code 1600 et. sec.		

☐ *See Attachment No. ___*

c. Does your proposed project involve any construction or grading-related activity that has significantly altered or would significantly alter the bed, bank, or riparian habitat of any stream or lake? ☑ YES ☐ NO
If YES, explain:
Road fill across streams facilitate diversion of water into ditch.

☐ *See Attachment No. ___*

b. Have you contacted the California Department of Fish and Game concerning your project?
☐ YES ☑ NO If YES, name, telephone number and date of contact:
Project is located in the SWRCB's North Coast Instream Flow Policy area. CDFW will be contacted in accordance with the protocols set forth in the Policy.

18. ENVIRONMENTAL DOCUMENT

a. Has any California public agency prepared an environmental document for your project?
☐ YES ☑ NO

b. If YES, submit a copy of the latest environmental document(s) prepared, including a copy of the notice of determination adopted by the California public agency. Public agency:

c. If NO, check the appropriate box and explain below, if necessary:
☐ The applicant is a California public agency and will be preparing the environmental document.*
☑ I expect that the State Water Board will be preparing the environmental document.**
☐ I expect that a California public agency other than the State Water Board will be preparing the environmental document.* Public agency: _____
☐ *See Attachment No. ___*

* Note: When completed, submit a copy of the final environmental document (including notice of determination) or notice of exemption to the State Water Board, Division of Water Rights and proof of payment of the State Clearinghouse filing fee. Processing of your application cannot be completed until these documents are submitted.

** Note: CEQA requires that the State Water Board, as Lead Agency, prepare the environmental document. The information contained in the environmental document must be developed by the applicant and at the applicant's expense under the direction of the State Water Board, Division of Water Rights.

19. WASTE/WASTEWATER

a. Will your project, during construction or operation, (1) generate waste or wastewater containing such things as sewage, industrial chemicals, metals, or agricultural chemicals, or (2) cause erosion, turbidity or sedimentation? ☐ YES ☑ NO
If YES, or you are unsure of your answer, explain below and contact your local Regional Water Quality Control Board for the following information (See instruction booklet for address and telephone no.):

_____
_____
_____

☐ *See Attachment No.* ___

b. Will a waste discharge permit be required for your project? ☐ YES ☑ NO
Person contacted: _____ Date of contact: _____

c. What method of treatment and disposal will be used? _____
_____
_____

☐ *See Attachment No.* ___

20. ARCHEOLOGY

a. Have any archeological reports been prepared on this project? ☐ YES ☑ NO
b. Will you be preparing an archeological report to satisfy another public agency? ☐ YES ☑ NO
c. Do you know of any archeological or historic sites located within the general project area?
☐ YES ☑ NO If YES, explain:

_____
_____
_____

☐ *See Attachment No.* ___

21. ENVIRONMENTAL SETTING

Attach **two complete sets of color photographs**, clearly dated and labeled, showing the vegetation that exists at the following three locations:

☑ Along the stream channel immediately downstream from the proposed point(s) of diversion.
☑ Along the stream channel immediately upstream from the proposed point(s) of diversion.
☑ At the place(s) where the water is to be used.
☑ *See Attachment No.* 3

SUBMITTAL FEES

Calculate your application filing fee using the "Water Right Fee Schedule Summary" that was enclosed in the application packet. The "Water Right Fee Schedule Summary" can also be viewed at the Division of Water Rights' website (www.waterrights.ca.gov).

A check for the application filing fee, payable to the "Division of Water Rights" and an $850 check for the Streamflow Protection Standards review fee [Pub. Resources Code § 10005(a)], payable to the "California Department of Fish and Game," must accompany this application. All applicable fees are required at the time of filing. If the application fees are not received, your application will not be accepted and will be returned to you. Please check the fee schedule for any fee changes prior to submitting the application.

DECLARATION AND SIGNATURE

I declare under penalty of perjury that all information provided is true and correct to the best of my knowledge and belief. I authorize my agent, if I have designated one above, to act on my behalf regarding this water right application.

Henry F. Chambers	Owner	July 23, 2018
Signature of Applicant	Title or Relationship	Date
Signature of Co-Applicant (if any)	Title or Relationship	Date

Digitally signed by Henry F. Chambers
DN: cn=Henry F. Chambers, o=UCSF, email=henry.chambers@ucsf.edu, c=US
Date: 2018.07.23 15:23:15 -07'00'

Applications that are not completely filled out and/or do not have the appropriate fees will not be accepted. In the event that the Division has to return the application because it is incomplete, a portion of the application submittal fee will be charged for the initial review.

"APPLICATION TO APPROPRIATE WATER" CHECKLIST

Before you submit your application, be sure to:

- ☐ **Answer each question completely.**
- ☐ **Number, label and include all necessary attachments.**
- ☐ **Include a legible map that meets the requirements discussed in the instruction booklet.**
- ☐ **Include the Water Availability Analysis or sufficient information to demonstrate that there is reasonable likelihood that unappropriated water is available for the proposed appropriation.**
- ☐ **Include two complete sets of color photographs of the project site.**
- ☐ **Enclose a check for the required fee, payable to the Division of Water Rights.**
- ☐ **Enclose an $850 check for the Streamflow Protection Standards review fee, payable to the Department of Fish and Game.**
- ☐ **Sign and date the application.**

Send the original and one copy of the entire application to:

State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, CA 95812-2000

ATTACHMENT 1

Estimate of Water Availability to Accompany Water Right Application of Dr. Henry F. Chambers, III

California Water Code Section 1260(k) requires that every application for a permit to appropriate water shall include "sufficient information to demonstrate a reasonable likelihood that unappropriated water is available for the proposed appropriation." This narrative and accompanying calculations provide the required information.

The subject Application includes three points of diversion (PODs #1, #2 and #3) on unnamed streams tributary to an unnamed stream thence the Russian River (see attached map). Diversion of up to 17.45 acre-feet is proposed for storage at an existing off stream reservoir (Upper Reservoir), which has a storage capacity of 18.07 acre-feet. The proposed season of diversion is December 15 to March 31. The following describes the methodology used to demonstrate a reasonable likelihood that water is physically available for the proposed appropriation.

The attached map shows the proposed point of diversion and the watershed area tributary thereto. The map also shows lines of equal mean annual runoff as shown on the map included with the document entitled *Average Annual Precipitation & Runoff in North Coastal California by S.E. Rantz, 1968.*[1] An excerpt of this map is attached (Rantz map).

The weighted mean annual runoff for the watersheds tributary to PODs #1, #2 and #3 was computed based on the Rantz map. Mean *seasonal* runoff for the watersheds were estimated by adjusting the mean *annual* runoff assuming that the ratio of seasonal to annual runoff is identical to the ratio of seasonal to annual mean precipitation. The Cloverdale precipitation station was used for this purpose (record attached). The resulting seasonal runoff value was adjusted by deducting the face value of any senior water rights in the watershed above the proposed points of diversion.

Calculations for the foregoing methodology are attached. These calculations show that in an average water year approximately 4.3 acre-feet would accrue to POD #2 and 4.8 acre-feet to POD #3; in addition, direct rainfall on Upper Reservoir would add 4.3 acre-feet in an average year. The combined amount from POD #2, POD #3, and direct rainfall is about 13.4 acre-feet. The calculations also show that 79.3 acre-feet would accrue to POD #1 in average year, and of this amount 19.17 acre-feet is attributable to the Applicant's pending Application 31920, leaving about 60 acre-feet. Deducting 9.1 acre-feet collected at PODs #2 and #3 leaves about 51 acre-feet available for diverting to offstream storage from POD #1 under this Application. Accordingly, it is reasonable to conclude that water is available for the subject Application.

---

[1] USGS Hydrologic Investigations Atlas HA-298, prepared in cooperation with the California Department of Water Resources.

Henry Chambers

Calculation of Estimated Weighted Mean Annual Runoff in POD Watersheds

Runoff Based on *Mean Annual Runoff in the San Francisco Bay Region, California, 1931-70, by S.E. Rantz*

Watershed	Area (ac)	Mean Annual Runoff [1] (in)	Volume (ac-in)	Volume (ac-ft)
Point of Diversion #1	93.3	16.7	1559	130
Point of Diversion #2	5.1	16.9	85	7
Point of Diversion #3	5.6	16.8	94	8

Notes:

1. Weighted mean annual runoff from automatic calculation using AutoCAD.

CLOVERDALE, CA

Total of Precipitation (Inches)

-41838

File last updated on June 5, 2018

a = 1 day missing, b = 2 days missing, c = 3 days, ..etc..,

z = 26 or more days missing, A = Accumulations present

Long-term means based on columns; thus, the monthly row may not sum (or average) to the long-term annual value.

MAXIMUM ALLOWABLE NUMBER OF MISSING DAYS : 5

Individual Months not used for annual or monthly statistics if more than 5 days are missing.

Individual Years not used for annual statistics if any month in that year has more than 5 days missing.

YEAR(S)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
1950	----- z	----- z	----- z	----- z	----- z	----- z	0 u	----- z	----- z	----- z	----- z	----- z	0 l
1951	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	0 l
1952	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	0 l
1953	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	0 l
1954	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	0 l
1955	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	4.17	25.39	29.56 j
1956	15.31	8.97	0.35	3.15	0.85	0.08	0.12	0	0.26	3.38	0.17	0.67	33.31
1957	8.05	10.25 c	3.81	3.14	5.49	0	0	0	4.3	8.26	1.2	5.47	49.97
1958	8.61	23.23	8.81	6.79	0.47	0.95	0	0	0.02	0.17	0.48	2.01	51.54
1959	17.19	11.01	1.48	1.26	0.02	0	0	0	3.42	0	0.02	2.22	36.62
1960	7.77	9.14	6.24	1.69	1.05	0	0	0	0	1.1	7.12	9.04	43.15
1961	6.39	4.19	6.04	1.08	0.55	0	0	0	0.15	0.34	7.22	3.88	29.84
1962	2.09	14.31	6.24	0.57	0.23	0	0	0.26	0.41	12.24	1.42	5.81	43.58
1963	0.08 g	6.58 c	7.8	7.28	1.51	0	0	0	0.15	4.71	11.52	1.68	41.23 a
1964	6.66	0.51	3.24	0.66	1.17	1.05	0.05	0	0	4.57	10.21	17.98	46.1
1965	11.15	1.77	1.95	7.91	0	0	0.03	0.5	0	0.13	15.96	7.57	46.97
1966	11.88	7.26	2.66	1.5	0.29	0.09	0	0.09	0.12	0	12.72	11.07	47.68
1967	15.86	0.65	10.79	6.24	0.25	2.12	0	0.01	0.04	1.48	3.64	6.3	47.38
1968	12.12	6.42	5.33	1.75	0.37	0	0	1.18	0	2.75	4.19	14.04	48.15
1969	18.93	15.02	2.3	3.54	0	0.02	0	0	0	2.23	1.97	18.22	62.23
1970	25.72	4.8	3.57	0.3	0.07	0.44	0	0	0	2.82	9.59	13.13	60.44
1971	6.29	0.33	5.94	1.63	----- z	0	0	0.07	0.46	0.39	3.08	7.95	26.14 a
1972	2.4	2.97	1.51	3.04	0.33	0.11	0	0.06	1.1	5.53	7.82	6.11	30.98
1973	18.73	11.93	4.57	0.21	0.07	0	0	0.25	0.98	3.99	19.67	7.63	68.03
1974	10.56	4.57	13.29	2.5	0.11	0	1.35	0.15	0	1.6	1.87	6.63	42.63
1975	1.73	14.31	12.07	2.06	0.04	0.02	0.25	0.07	0	4.93	1.69	1.87	39.04
1976	0.53	2.64	1.62	3.9	0	0	0.03	1.12	0.41	0.29	2.7	1.27	14.51
1977	2.62	2.82	2.99	0.15	2.19	0	0	0.04	3.31	1.15	6.8	10.41	32.48
1978	20.33	10.08	7.16	5.96	0.17	0.02	0	0	2.21	0	1.45	0.37	47.75
1979	11.74	9.13	5.66	2.84	0.88	0	0	0	0.27	6.43	8.21	9.48	54.64
1980	9.32	16.91	2.14	2.87	0.34	0.19	0	0	0.03	0.82	0.7 g	8.54	41.16 a
1981	10.85 a	4.08	4.26	0.47	1.06	0	0.06	0	0.6	5.71	13.58	12.02	52.69
1982	7.94 a	5.97	8.01	6.55	0.06	0.08	0	0	0.8	4.84	9.54	8.22	52.01
1983	14.57	13.05	20.76	5.7	0.62	----- z	----- z	1.49	0.84	1.33	17.61	17.8	93.77 b

1984	0.68	3.41	3.27	1.27	0.2	0.25	0	0.15	0.1	2.64	14.6	2.34	28.91
1985	0.56	2.81	6.73	0.17	0.01	0	0.07	0	1.34	2.13	5.55	4.48	23.85
1986	9.37	22.13	8.58	1.15	0.6	0.02	0	0	1.75	0.89	0.19	2.9	47.58
1987	6.2	5.97	8.52	0.17	0.25	0	0	----- z	0	1.8	4.37	13.28	40.56 a
1988	8.74	0.58	0.16	2.68	0.83	0.48	0	0	0	0.36	5.51	3.99	23.33
1989	1.53	1.11	12.6	1.73	0.23	----- z	0	0	2.75	4.14	2	0	26.09 a
1990	7.37	3.87	1.99	0.37 f	5.24	----- z	----- z	----- z	----- z	----- z	0.46	1.3	20.23 f
1991	1.02	4.78	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	----- z	5.8 j
1992	----- z	----- z	----- z	----- z	----- z	----- z	----- z	0 p	0.01	3.46	0.69	13.77	17.93 h
1993	13.78	10.11	4.07	2.59	4.5	0.55	0	0	0	0.41	2.9	5.87	44.78
1994	5.83	7.42	0.46	2.73	1	0	0.03	0	0.08	0.49	8.42	5.04	31.5
1995	31.25	0.34	20.14	3.89	2.53	0.38	0	0	0	0	0.2	13.79	72.52
1996	9.72	13.12	3.01	4.04	2.84	0	0	0	0.19	1.61	5.17	20.31	60.01
1997	14.3	0.49	2.17	0.83	0.84	0.59	0	1.03	0.46	1.63	10.78	3.94	37.06
1998	15.16	24.04	6.15	----- z	6.05	0.02	0	0	0.06	1.03	9.2	1.51 a	63.22 a
1999	4.66	11.84	6.26	2.1	0.31	0	0	0	----- z	1.13	5.28 a	1.14	32.72 a
2000	8.1	14.45	2.5	3.36	1.45	0.32	0	----- z	0.15	4.22	----- z	0.89	35.44 b
2001	7.45	10.94	3.51	1.22	0	0.72	0	0	0.17	1.58	10.94	12.8	49.33
2002	5.44	1.97	3.08 b	0.45	1.15	0	0	0	0	0	5.87	22.66	40.62
2003	5.43	2.41 a	3.6	8.39 a	0.73	0	0	0	0	0	5.37	16.24	42.17
2004	5.38	12.81	1.39	0.63 k	0	0.02	0	0	0	5.12	3.44	11.58	39.74 a
2005	7.75	4.67	6.63	2.49	5.56	1.47 a	0	0	0	1.21 a	4.65 a	20.59 a	55.02
2006	7.51 a	5.63	15.43 a	9.38	0.54	0	0	0	0	0.34	3.66 a	7.45 a	49.94
2007	0.49 c	11.1 a	0.72	2.4	0.45	0	0.1	0	0.13	2.76	0.5	6.95 a	25.6
2008	16.68	3.24 a	0.47	0.4	0	0	0	0	0	1.79	4.17	3.88 a	30.63
2009	0.48	10.89	3.31 b	0.72	3.05	0	0	0	0	2.82 a	2.61	4.66 c	28.54
2010	18.66 e	----- z	3.73 b	8.36 a	2.94	0.03	0	0	0.06 a	5.83	4.2	10.15 b	53.96 a
2011	3.41 x	5.91 r	14.01 g	0.29 v	1.37 y	2.27 v	0	0	----- z	3.33 y	3.22 r	----- z	0 j
2012	6.3 w	2.33 s	8.52 o	2.57 u	----- z	----- z	0	0 a	0	1.75	11.94	13.57	27.26 f
2013	1.3	0.46	3.02	0.41	0.22	1.3	0	0	0.5	0	1.1	0.36	8.67
2014	0.24	11.84	6.7	1.4	0	0	0	0.03	0.84	0.99	5.19	16.65	43.88
2015	0.32	8.03	0.42	2.59	0.08	0.22	0.16	0	0.74	0.21	1.97	10.32	25.06
2016	14.39	1.14	13.5	0.18	0.29	0	0	----- z	----- z	8.34	6.18	6.34	50.36 b
2017	19.61	17.61	4.14	5.17	0	0.28	0	0 d	0	0.36 k	5.38	0.13 c	52.32 a
2018	7.44 f	0.59 h	6.11 d	3.75 i	0.25 g	----- z	----- z	----- z	----- z	----- z	----- z	----- z	6.11 k
Period of Record Statistics													
MEAN	9.22	7.79	5.47	2.82	1.05	0.21	0.04	0.12	0.51	2.41	5.73	8.22	42.06
S.D.	6.86	6.01	4.55	2.46	1.56	0.43	0.18	0.32	0.94	2.52	4.71	6.32	13.56
SKEW	0.8	0.79	1.53	1.06	2	2.63	6.79	3.13	2.48	1.55	0.99	0.72	-0.16
MAX	31.25	24.04	20.76	9.38	6.05	2.12	1.35	1.49	4.3	12.24	19.67	25.39	72.52
MIN	0.24	0.33	0.16	0.15	0	0	0	0	0	0	0.02	0	8.67
YRS	58	58	59	55	57	55	58	56	57	58	59	61	44

Water Right Application
by Dr. Henry Chambers, III
Estimate of Water Availability

Monthly Precipitation[1]
CLOVERDALE, CALIFORNIA

Month	Mean Precipitation (in)
October	2.41
November	5.73
December	8.22
January	9.22
February	7.79
March	5.47
April	2.82
May	1.05
June	0.21
July	0.04
August	0.12
September	0.51
Annual	**43.59**

Point of Diversion #1

Mean Precipitation for requested diversion season (12/15 - 3/31):	26.59 in
Precipitation during requested diversion season as a percentage of total precipitation:	61.00%
Mean Annual Runoff:[2]	16.7 in
Estimated Mean Seasonal Runoff:[3]	10.2 in
Watershed Area for POD #1:[4]	93.3 ac
Total Estimated Mean Seasonal Runoff at POD #1:	**79.3 ac-ft**
Requested under Application 31920 diversion amount:	19.17 ac-ft
Total Seasonal Amount Remaining in Stream After Diversion:	**60.1 ac-ft**

Point of Diversion #2

Mean Precipitation for requested diversion season (12/15 - 3/31):	26.59 in
Precipitation during requested diversion season as a percentage of total precipitation:	61.00%
Mean Annual Runoff:[2]	16.9 in
Estimated Mean Seasonal Runoff:[3]	10.3 in
Watershed Area for POD #2:	5.1 ac
Total Estimated Mean Seasonal Runoff at POD #2:	**4.3 ac-ft**

Point of Diversion #3

Mean Precipitation for requested diversion season (12/15 - 3/31):	26.59 in
Precipitation during requested diversion season as a percentage of total precipitation:	61.00%
Mean Annual Runoff:[2]	16.8 in
Estimated Mean Seasonal Runoff:[3]	10.3 in
Watershed Area for POD #3:	5.6 ac
Total Estimated Mean Seasonal Runoff at POD #3:	**4.8 ac-ft**

Offstream Reservoir - Direct Precipitation

Average Direct Rainfall on Reservoir (12/15 - 3/31):[6]	26.59 in
Surface Area of Offstream Reservoir:[5]	1.96 ac
Total Estimated Mean Direct Rainfall on Reservoir	**4.3 ac-ft**

Notes:

[1] Source: Western Regional Climate Center website, https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca1838

[2] *Mean Annual Runoff in the San Francisco Bay Region, California, 1931-70 (Miscellaneous Field Studies Map MF-613)* , by S.E. Rantz, 1974.

[3] Estimated mean seasonal runoff is computed by multiplying mean annual runoff by percent seasonal precipitation.

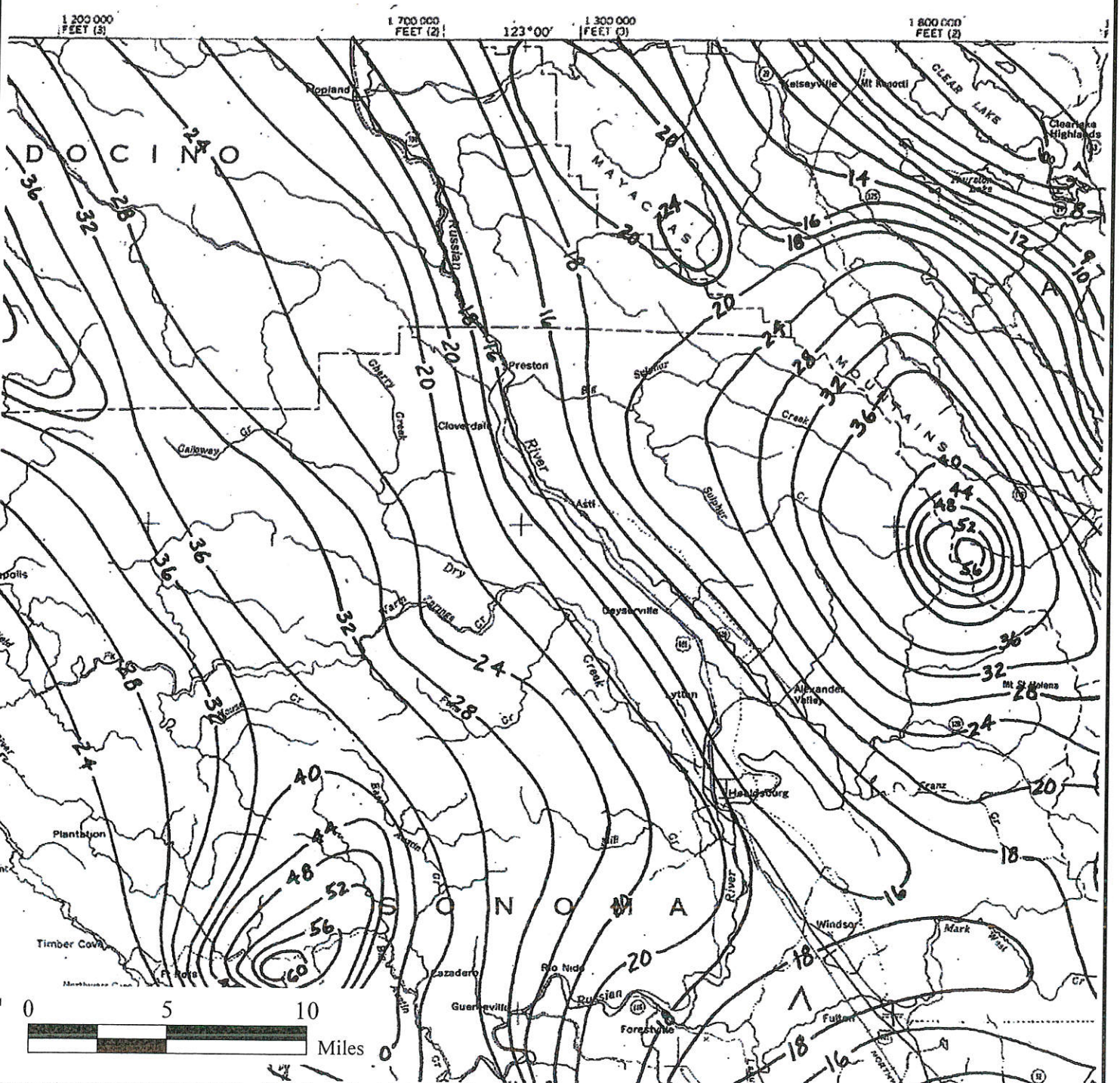
[4] Includes watershed area of POD #2 and POD #3.

[5] Source: map prepared by Munselle Civil Engineering on January 2, 2018.

[6] Assumes 100% of seasonal direct precipitation accrues to reservoir.

ATTACHMENT A

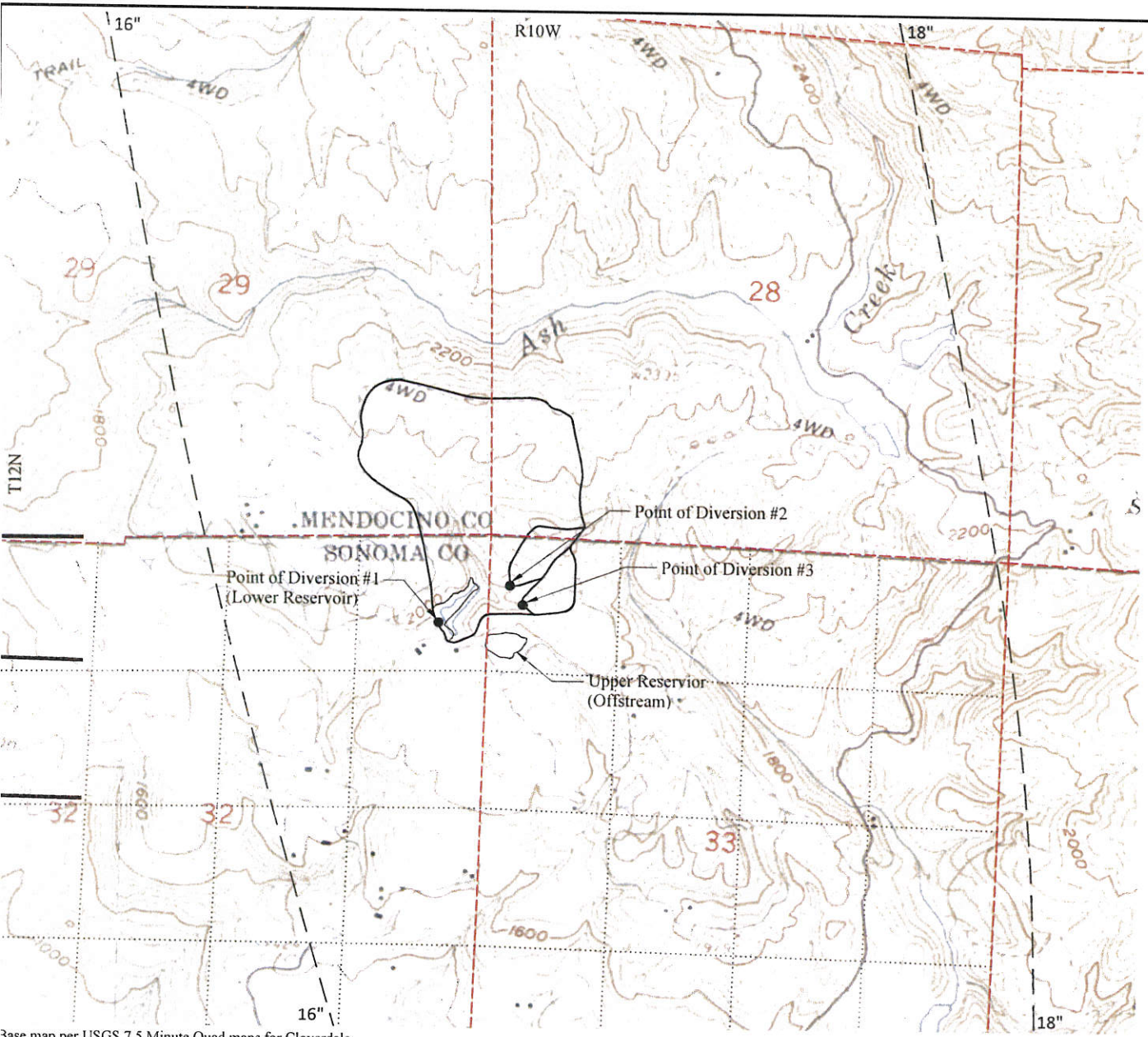
CALI



Mean Annual Runoff Isohyet's per Mean Annual Runoff in the Sonoma County Region by S.E. Rantz, 1974.

Q:\Drawings\Chambers\New Application Preliminary Water Rights Analysis.dwg

July 2018



Base map per USGS 7.5 Minute Quad maps for Cloverdale.

N

0 500 1,000 2,000

Legend

- Point of Diversion
- 16" Line of Mean Annual Runoff
- Watershed Boundary

Point of Diversion	Description
1	Located N.2,072,668' and E.6,279,692', California Coordinate System, NAD 83, Zone 2, being within the NE¼ of NE¼ of Section 32, T12N, R10W, MDB&M.
2	Located N.2,073,050' and E.6,280,400', California Coordinate System, NAD 83, Zone 2, being within the NW¼ of NW¼ of Section 33, T12N, R10W, MDB&M.
3	Located N.2,073,854' and E.6,280,527', California Coordinate System, NAD 83, Zone 2, being within the NW¼ of NW¼ of Section 33, T12N, R10W, MDB&M.

Map to Accompany
Preliminary Water Availability Analysis
for
Water Right Application _____
by
Dr. Henry F. Chambers
for
Appropriation of Water from Unnamed Stream

Sonoma County, California

Wagner Bonsignore
Consulting Civil Engineers, A Corporation

July 2018